

3.5 Showing Lines are Parallel

Postulate 9

Corresponding Angle Converse

If corresponding \angle s are \cong , then the lines are \parallel .

Theorem 3.8

Alternate Interior Angle Converse

If alternate interior \angle s are \cong , then the lines are \parallel .

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Theorem 3.9

Alternate Exterior Angle Converse

If alternate exterior \angle s are \cong , then the lines are \parallel .

Theorem 3.10

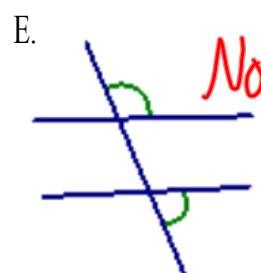
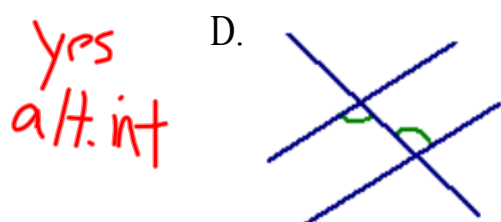
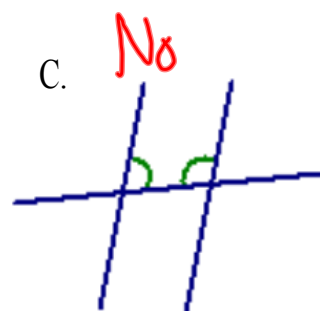
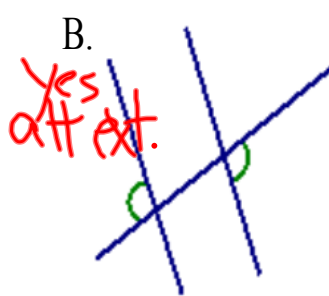
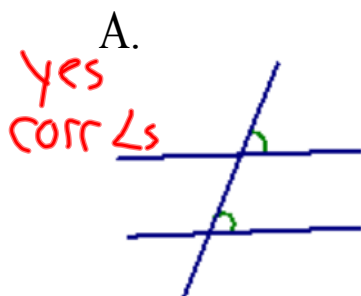
Same-side Interior Angle Converse

If same-side interior \angle s are supplementary, then the lines are \parallel .

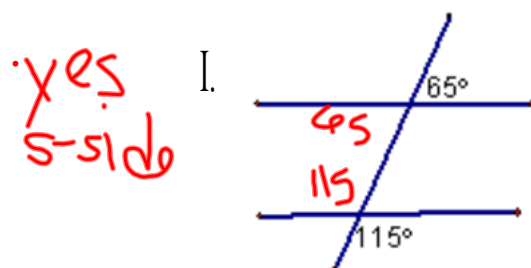
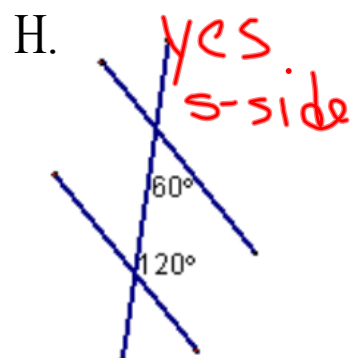
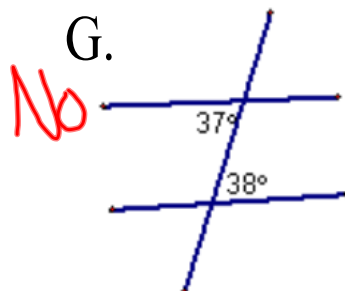
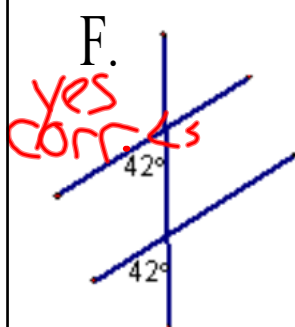
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Are the given lines parallel?

If yes, why?



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Find the value for x and y , so that the lines are parallel.

$$y = 38$$

$$x = 142$$



$$\begin{array}{r} 180 \\ - 38 \\ \hline 142 \end{array}$$



$$y = 95^\circ$$

$$x = 85^\circ$$

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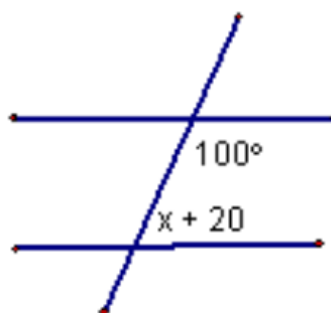


$$x = 35$$

$$y = 145$$

$$z = 145$$

$$\begin{array}{r} 180 \\ - 35 \\ \hline 145 \end{array}$$

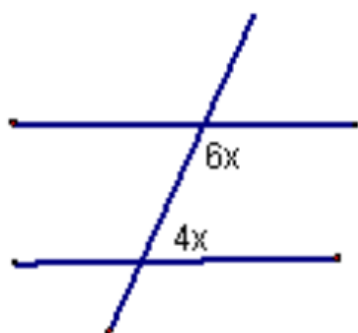


$$x + 20 + 100 = 180$$

$$x + 120 = 180$$

$$x = 60$$

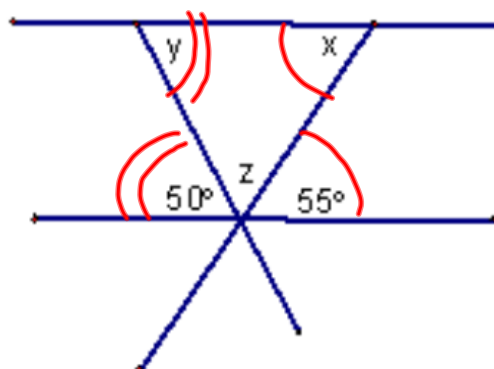
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$$4x + 6x = 180$$

$$10x = 180$$

$$x = 18$$



$$x = 55$$

$$y = 50$$

$$\begin{array}{r} 180 \\ - 105 \\ \hline z = 75^\circ \end{array}$$

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Which lines are parallel based on the given information?

a and b

OR

c and d

OR

neither

1. $\angle 1 \cong \angle 9$ *a||b*

2. $\angle 3 \cong \angle 5$ *c||d*

3. $\angle 1 \cong \angle 2$ *a||b*

4. $\angle 3 \cong \angle 6$ *a||b*

5. $\angle 1 \cong \angle 6$ *Neither*

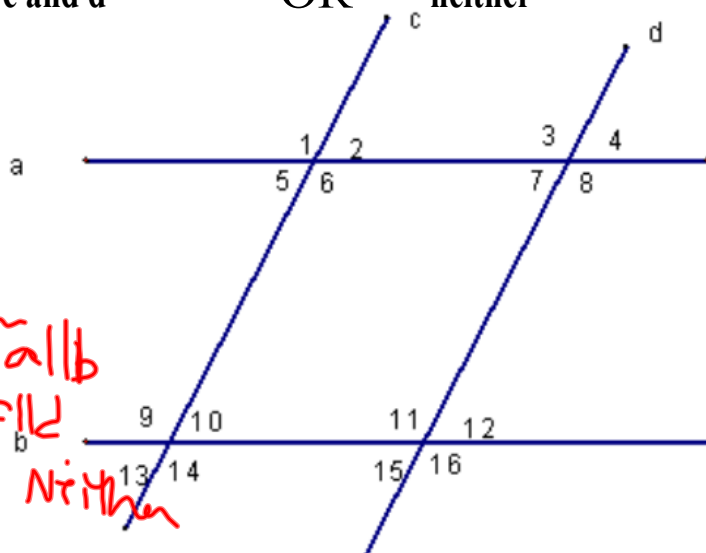
6. $m\angle 8 + m\angle 12 = 180$ *a||b*

7. $m\angle 2 + m\angle 3 = 180$ *c||d*

8. $m\angle 10 + m\angle 15 = 180$ *Neither*

9. $\angle 3 \cong \angle 12$ *c||d*

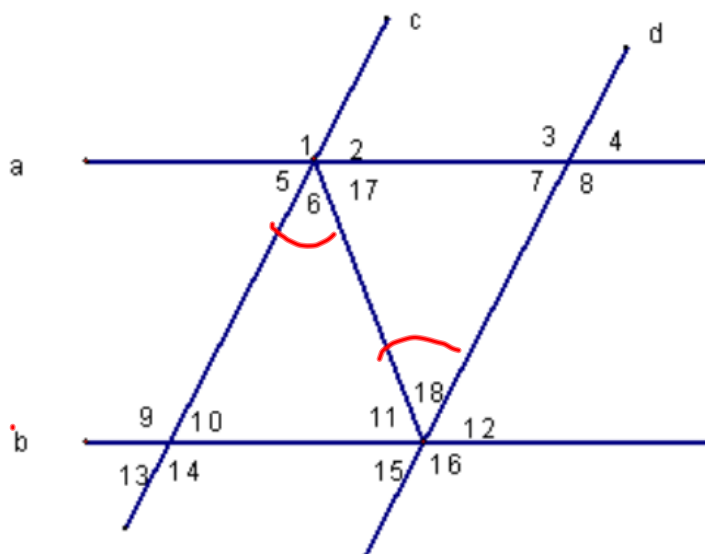
10. $\angle 1 \cong \angle 6$ *Neither*



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11. $\angle 1 \cong \angle 7$ *a // b*

12. $\angle 8 \cong \angle 6$ *c // d*



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{ **HW**
p. 139-142
#s 3-5, 10-15, 18-21, 24-29, 35, 36

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